

**GIBRALTAR**  
**G-1611F S10-P1 Fixed Shallow Bollard**  
**Section 34 71 13**  
**Passive Vehicle Barriers**

**PART 1 – GENERAL**

**1.01 WORK INCLUDED**

The contractor shall provide all labor, materials and appurtenances necessary for installation of the passive vehicle barrier system defined herein at (*Insert Site Location Here*).

**1.02 SYSTEM DESCRIPTION**

A. The manufacturer shall supply a total passive vehicle barrier system of the Gibraltar G-1611F Fixed Shallow Bollard design. The system shall include all components required. The barrier shall comply with Gibraltar's System Drawing Number (*Insert Drawing Number Here*.)

B. The G-1611F Fixed Shallow Bollard was engineered to the pass requirements in accordance with ASTM F3016-19 to meet an S10 P1 impact rating. This bollard shall be engineered, based off Gibraltar's G-1631F Fixed Shallow Bollard that received an ASTM F3016-19 S30 P1 certification.

C. The G-1611F Fixed Shallow Bollard shall consist of an 6-5/8 inch (168.3mm) outside diameter pipe embedded within an 8-inch (203mm) deep shallow concrete foundation.

D. Gibraltar products are tested by an ISO 17025 accredited testing facility.

**1.03 QUALITY ASSURANCE**

A. Gibraltar maintains a quality management system that is certified under the American Institute of Steel Construction (AISC) Standard for Bridge and Highway Metal Components. All Gibraltar products are processed under this certified quality management system.

B. The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

**1.04 REFERENCES**

- ASTM A36 Standard Specification for Carbon Structural Steel
- ASTM A123 - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products
- ASTM A500 Standard Specification for Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
- ASTM A572 Standard Specification for High-Strength Low-Alloy Columbium-Vanadium Structural Steel
- ASTM A992 Standard Specification for Structural Steel Shapes
- ASTM D7803- Standard Practice for Preparation of Zinc (Hot-Dip Galvanized) Coated Iron and Steel Product and Hardware Surfaces for Powder Coating
- ASTM B117 - Practice for Operating Salt-Spray (Fog) Apparatus.
- ASTM D523 - Test Method for Specular Gloss.
- ASTM D714 - Test Method for Evaluating Degree of Blistering in Paint.
- ASTM G155 - Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials
- ASTM D1654 - Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.
- ASTM D2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
- ASTM D2794 - Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
- ASTM D3359 - Test Method for Measuring Adhesion by Tape Test.
- ASTM F3016 - Standard Test Method for Surrogate Testing of Vehicle Impact Protective Devices at Low Speeds
- AWS D1.1/D1.1M - Structural Welding Code - Steel (2010)

### 1.05 SUBMITTAL

The manufacturer’s literature shall be submitted prior to installation.

### 1.06 PRODUCT HANDLING AND STORAGE

Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism and theft.

## PART 2 – MATERIALS

### 2.01 MANUFACTURER

A. The anti-ram vehicle barrier system shall conform to the G-1611F Fixed Shallow Bollard design manufactured by Gibraltar Perimeter Security, L.P. in Marble Falls, Texas. This system shall be engineered to meet ASTM F3016-19, Impact Condition Designation S10, Penetration Rating P1, with the capability of stopping a 5,000lb surrogate vehicle traveling at speeds up to 10mph.

B. The entire anti-ram vehicle barrier system shall be obtained from Gibraltar.

C. Upon request, Gibraltar can supply a full set of “As Built” drawings for all security systems and civil work upon shipment in an easily accessible format.

### 2.02 MATERIAL

A. Steel material shall conform to the ASTM requirements shown in Table 1.

B. Gibraltar will provide material certifications with each order upon request.

<b>Table 1 – Steel Material Requirements</b>	
<u>Material</u>	<u>Specification</u>
Welded joints	Performed by welders certified to AWS D1.1
Steel tubing	ASTM A500
Steel Plates	ASTM A36/A572 Gr. 50
W-Beams	ASTM A992

### 2.03 FABRICATION

A. Fabrication of the members shall be in accordance to manufacturer’s instructions, the plan details, and this specification.

B. Shop drawings can be provided for site specific locations of each barrier upon request.

C. The G-1611F Fixed Shallow Bollard coating system shall protect against the effects of long-term corrosion. The standard coating is Hot Dip Galvanized to ASTM A123. When alternative color is required, the buyer will specify the coating type (wet paint, powder coat, etc.), color and design to the manufacturer at the time of ordering. If complex powder coat design is required, the manufacturer may use a combination of powder coat and wet paint processes to achieve the final design. For standard solid color coating, the powder coating will consist of a multi-step, two coat powder coating process. The bottom coat is a zinc rich primer followed by a standard semi-gloss black top-coat. If the buyer specifies a galvanized, then powder coated finish, the powder coating will be applied in accordance with ASTM D7803.

D. All Gibraltar products are coated to the customer specification.

## PART 3 - EXECUTION

### 3.01 PREPARATION

A. The purchaser shall indicate the location of passive vehicle barrier line with suitable stakes.

B. The purchaser shall indicate all underground utility locations, USC&G benchmarks, property monuments, and other underground structures that interfere with installation.

C. Before installing the G-1611F Fixed Shallow Bollard, all necessary site clearing and grading shall be performed by the purchaser. An adequate clearance on both sides of the anti-ram vehicle barrier line is required.

### **3.02 INSTALLATION**

A. The barrier shall be installed per Gibraltar's System Drawing Number (*Insert Drawing Number Here*). Construct concrete foundations to the dimensions specified by the plans. Excavate a properly sized area for post foundations and install reinforcing steel in accordance with the plans. Place the concrete, install the posts and plumb. Refer to contract or submittal plans for more installation details.

B. Gibraltar's passive vehicle barriers are warranted against defects in material and workmanship on structural components for one year from ship date, when installed by a factory-trained installer.

### **3.03 MAINTENANCE**

General maintenance of the G-1611F Fixed Shallow Bollard shall consist of typical fence maintenance per the project specific facilities normal standards. This may consist of removal of vegetation, and visual inspection for evidence of tampering. If a vehicle impacts the barrier it is recommended that the owner and/or maintainer of the facility contact Gibraltar to purchase replacement parts.

### **3.04 CLEANING**

The contractor shall clean the jobsite thoroughly to ensure it is left neat and free of any debris caused by the installation of the anti-ram vehicle barrier system.